

Specimens examined: Cárdenas, Matanzas, Cuba. El Purio, Calabazar de Sagua, Las Villas, Cuba. Isle of Pines. Bethlehem; Rust-op-Twist and Concordia, St. Croix, Virgin Ids. Puerto Sosúa, Santo Domingo, Hispaniola.

NEW LAND SNAIL FROM QUEENSLAND

By ALAN SOLEM

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In the process of examining Pacific Ocean land snails at the University of Michigan Museum of Zoölogy, several specimens labeled with manuscript names of John Brazier were discovered. Some have been subsequently described by other people, but I have been unable to locate any reference to the shell labeled "*Endodonta creon* Brazier" which is described below. This species sheds important light on the affinities of the genus *Theskelomensor*, and description of the single available specimen as a distinct species seems worthwhile.

THESKELOMENSOR CREON, new species.

Pl. 3, figs. 1-3

A species of *Theskelomensor* with a moderately wide umbilicus, loosely coiled whorls, and the periphery with a cord-like keel. Shell small, thin, depressed-trochoidal, periphery of body whorl with a thread-like keel. Whorls $5\frac{7}{8}$, slightly rounded, sutures little impressed. Spire only slightly elevated, base of shell inflated. Apical whorls $1\frac{1}{2}$, smooth. Remaining whorls with sculpture of close-set, wavy, spiral lines partially interrupted by weak, slightly retractive growth striae. Aperture subtriangular, lip thin and not reflected. Parietal callus thin, white. Umbilicus open deep, contained 3.35 times in the diameter. Epidermal color translucent horn, underlying calcareous layer white. Diameter 6.7 mm., height 2.6 mm.

Holotype, University of Michigan Museum of Zoölogy 136666 from 20 miles northwest of Cardwell, Queensland, Australia.

Comparisons: The only Australian species related to this novelty is *Theskelomensor lizardensis* (Pfeiffer). The sculpture, shape, coloration, type of whorl increment, and apertures are similar, but the two species are easily separated (see figs. 1-6). *T. lizardensis* (figs. 4-6) has a supraperipheral keel, more whorls, and a wider umbilicus than does *T. creon*.

Outside of Australia, the most similar shells are found in Philippine Island — New Guinea *Inozonites* — *Pareuplecta* —

Zagmena complex. The Philippine species *I. bicarinata* Semper, *I. biangulata* Pfeiffer, *I. bohollensis* Pfeiffer, and *I. reyesi* Hidalgo have the 2-keeled sculpture and shape of *T. lizardensis*. Other Philippine species (such as *P. subterranea* Quadras and Moellendorff) and the New Guinea "*Zagmena*" (such as *pratti* Gude and *haematina* Moellendorff) have the single keel of *T. creon*. All the above species differ from *Theskelomensor* in having the umbilicus barely perforate and the radial sculpture more prominent than the spiral sculpture. In the Ceylonese *Euplecta*, however, there occurs the same deep umbilicus and prominent spiral sculpture found in *Theskelomensor*.

The taxonomic position of *Helix lizardensis* Pfeiffer has long been uncertain, and Iredale's proposal of *Theskelomensor* only served to emphasize its uncertain position. The thread-like keel, smooth apical whorl and kind of microsculpture remove it from the Endodontidae, just as the thread-like double keels make it improbable that *T. lizardensis* belongs to the Trochomorphinae. The discovery of a second Australian species with only a single keel ties the shell into the helicarionid "*Euplecta*" series. The anatomy of these species is imperfectly known, and placement in one of the subfamilies of the Helicarionidae (= Ariophantidae) is not yet possible. The exact relationships of *Inozonites*, *Euplecta*, *Pareuplecta*, *Theskelomensor*, and *Zagmena* remain to be determined. *Euplecta* and *Theskelomensor* seem to be "good" genera, but the Philippine-New Guinea species placed in *Pareuplecta*, *Inozonites*, and *Zagmena* show no conchological differences which seem indicative of generic separation.

Zoogeographical comments: Southeast Asia and Indonesia represent a center of evolution from which successive waves of organisms have populated the other parts of the Indo-Pacific area. Relict distributions around the fringes of Indonesia are well known in many groups of animals and would be expected to occur in land snails. Unfortunately studies of the land snails in the past fifty years have tended to be faunistic surveys rather than systematic monographs. As a result cases of relict distributions are buried under an avalanche of generic and family names proposed for species of one area without regard for any extralimital relatives. Much more important than faunistic surveys, are systematic reviews of genera and families which will enable

us to determine the basic distribution patterns and study the possible origins of the faunas of individual areas.

Theskelomensor, if proved to be a helicarionid related to the *Euplecta* series, becomes an Asian element in the fauna of Queensland. As an endodontid, it becomes another endemic Australian taxon. Since the structure of *T. creon* provides some evidence that *Theskelomensor* belongs definitely to the Helicarionidae, it has been thought worthwhile to describe the species, even though only one shell is available. Only through such small additions to our knowledge will an eventual picture of Pacific land snail distribution emerge.

LIFE HISTORY STUDIES OF CAMPELOMA DECISUM

By NORMAN A. CHAMBERLAIN¹

Only a few studies pertaining to the life history of the genus *Campeloma* (family Viviparidae, order Prosobranchiata) have been published. The genus is restricted to lakes and streams of eastern North America (Baker, '28) including some lakes and streams of piedmont North Carolina (Walter, '54). For these reasons the snail *Campeloma decisum* was chosen for a study of some aspects of its life history.

The first account of the morphology of the reproductive system in *Campeloma* (Call, 1888) was confined to the gross anatomy of male and female *C. subsolidum*. A more complete study of the morphology of the female reproductive tract in *C. rufum* was made by Mattox ('38). Crabb ('29) published an observation of young *C. decisum* being released in the laboratory. Young snails in the uterus (*i.e.*, gestatory sac) of *C. rufum* were described by Mattox ('35) as being enclosed in an egg membrane with no connection to the adult uterine wall.

Parthenogenesis was demonstrated in *C. rufum* by Mattox ('37) in a study based on histological examination. An abortive second maturation division was shown which left the ovum with the somatic number of chromosomes:—12. Pollister and Pollister ('40) reported the results of a number of studies they had made on somatic chromosome numbers in ten species of the family Viviparidae. They found in four species of *Campeloma* and in

¹Honors research in zoology at the University of North Carolina under direction of Dr. C. E. Jenner.